1 Hot Mix Asphalt Paving Inspection

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CHAPTER ONE:
HOT MIX ASPHALT PAVING INSPECTION

The purpose of this course is to teach the HMA Technician how to properly inspect Hot Mix Asphalt (HMA) paving operations. Emphasis will be on acquiring the skills and knowledge required to conduct the inspection to ensure construction of quality pavements in conformance with the plans and Specifications. The construction of smooth, durable, and safe highways requires careful planning and continuous monitoring.

TERMINOLOGY

HMA has numerous synonyms. This material has been called bituminous paving mix(ture), bituminous concrete, bituminous mix(ture), asphalt paving mix(ture), asphalt mix(ture), asphaltic concrete or plain "asphalt", among other terms. This manual uses the term "hot mix asphalt" to help standardize the wording and minimize confusion. When the Standard Specifications are referenced in the manual, QC/QA HMA is used for mixtures in accordance with Section **401**, HMA is used for mixtures in accordance with Section **402**, and SMA (Stone Matrix Asphalt) is used for mixtures in accordance with Section **410**.

Asphalt materials include Performance Graded (PG) Asphalt Binders, Asphalt Emulsions, Cutback Asphalt, Utility Asphalt, and Asphalt used for coating corrugated metal pipe. Hot mix asphalt used for Quality Assurance requires PG binders to be used for the asphalt material. This manual uses the term "binder" when referring to this material.

DUTIES

The general duties of an HMA Technician are the same as for all other Technicians. These duties are defined in **Section 105.09** and summarized as follows:

1) Keep the Project Engineer or Project Supervisor (PE/PS) informed as to the progress of the work and the manner in which the work is being done

2) Report whenever the material furnished and the work conducted fails to meet the requirements of the Specifications and the contract

3) Call to the attention of the Contractor, as the work progresses, any known deviations from, or infringement upon, the plans and Specifications with respect to materials and workmanship

Technicians are authorized to inspect all work conducted and materials furnished. They have authority to reject defective materials and to suspend any work that is being done improperly, subject to the final decision of the Project Engineer or Project Supervisor.

DAILY TASKS

The Technician is required to be aware of the Contractor's planned work for each day to include what will be done, how much work will be done, and what equipment will be used. The daily reports are required to be completed and submitted to the PE/PS promptly. A safety meeting is conducted with the PE/PS each day of operations to review the potential hazards of the work for that day.

CHAIN OF COMMAND

Every organization has a number of management levels, each with their own assigned authority and responsibility. The Technician is required to know the chain of command within INDOT as well as in the Contracting firm. Working through the chain usually minimizes problems and maintains cooperation.

LOCAL LEVEL

The HMA Technician is assigned to and reports to the Project Engineer or Project Supervisor.

The other levels of management in the field include:

1) The District Area Engineer

2) The District Construction Engineer

3) The District Highway Operations Director

4) The District Deputy Commissioner

When there are major problems on the contract, such as equipment breakdown or non-routine questions or requests from the Contractor, the PE/PS is contacted. If the problem is urgent and the PE/PS is not available, the Area Engineer is contacted.

The HMA Technician and the HMA plant are required to communicate with each other to resolve any problems related to the mix. A quick means of communication, such as a radio system furnished by the Contractor or access by telephone, is needed.

CENTRAL OFFICE

Each District Construction Engineer has a Construction Field Engineer to provide guidance concerning HMA operations. The Field Engineers are each assigned a construction specialty and answer to the Manager, Office of Construction Management.

CONTRACTOR

Typical Contractor organizations include:

1) The crafts -- operators, carpenters, laborers

2) Job foremen

3) Job superintendent

4) General superintendent

5) The owner

Technicians have the most contact with the foremen and job superintendent and are required to work through these individuals, if possible, rather than the craftsmen directly. Under no circumstances does the Technician operate the Contractor's equipment.

SAFETY

HMA Technicians are required to be concerned with the safety of the traveling public, other INDOT employees, and the Contractor’s work force, as well as their own safety. Although many safety devices and procedures have been established to provide a safe construction work zone, various hazards still exist. These hazards are required to be identified and the necessary safety precautions taken to prevent injuries and accidents.

HAZARDS

Safety hazards that are present every day for inspecting HMA paving, include:

Equipment

Type of Equipment	Potential Hazard
Trucks	Dump bed and tailgate operation
	Climbing on side of bed to check mix
Pavers	Clothing catches causing injuries
	Burns
	Being hit by paver extensions
Rollers	High center of gravity, easily tipped over
	Being hit or run over
	Being caught in the pinch points of the roller when turning
Power brooms	Flying debris and dust
Air hammers	Flying debris and dust
Hand tools	Long handles
Propane tank	Fire
	Explosion
	Eye irritant
Vehicle and Equipment fires	Burns

Materials

Type of Material	Potential Hazard
Cleaning solvents	Fire
Hot mix material	Burns
Tack coat	Slips and falls

Traffic

Type of Traffic	Potential Hazard
Traveling public through or adjacent to the work zone	Being hit
Construction traffic	Being hit

POSSIBLE INJURIES

Safety hazards may result in accidents which cause injuries or death. The possible injuries that may occur are:

Part of Body	Possible Injury
Eyes	Flying debris and dust
Hands and arms	Cuts and lacerations
	Bruises and abrasions
	Burns
Body	Falls
	Burns
	Bruises
	Serious, extensive and possibly fatal injuries if run over
Feet	Blisters
	Burns
	Bruises

SAFETY PRECAUTIONS

Dress

Clothing

Regular clothing is worn. Loose jackets, shirts, or pants are never worn because of the danger of getting caught in moving parts.

Shoes

Work type boots with non-skid soles and steel toes are required to be worn. The soles of the shoes are required to be reasonably free of tack. Tennis shoes do not provide adequate foot protection and are not worn.

Safety glasses

Safety glasses are available and worn when there is any possibility of damaging the eyes.

Gloves

When climbing on the truck and conducting other similar tasks, gloves are worn.

Ear plugs

Ear protection may be needed if jackhammers or other loud noises are prevalent.

Minimizing Exposure

The risk of having an accident that results in injury may be minimized by following these precautions:

1) Never get between the paver and a hauling truck backing into the hopper

2) Stay back when the truck dump bed is in motion and when the paver hopper wings are in operation

3) When collecting weigh tickets from the driver's side, remember that fast moving traffic is only a step away

4) When climbing onto a truck, use the steps and hand holds when they are available

5) Do not climb onto truck running boards, unless absolutely necessary to do so

6) Inform the driver before climbing up on the truck bed

7) Don't talk to the driver or other individuals unnecessarily

8) Horse play and goofing around are not tolerated

9) Be alert to changes in the conditions on the contract that affect safety hazards. One example is one-way traffic versus two-way traffic.

10) Park the INDOT vehicle out of the way of the traffic

Pertinent Information

Fires

Fires on the contract or in the field office are not common, but may occur. Basic fire suppression, the locations of fire extinguishers, and how to operate the fire extinguishers is required to be known.

First Aid

The proper treatment of minor cuts and burns not only reduces the irritation but also reduces the chance of infection and more serious complications. Basic methods of treatment and the location of the first aid kit are required to be known.

Emergencies

Emergency situations may arise that require contacting aid. At the start of the contract, the location and phone number or best method to contact a medical facility, an ambulance, the fire department, and the State Police are required to be identified.

Accidents

In the event of an accident on the contract, all available information for possible inclusion in the permanent contract records is recorded. The PE/PS is given information such as the date, time, weather, people present, equipment, vehicle type and identification numbers, and the sequence of events.

SAFETY EQUIPMENT

INDOT requires employees to use appropriate personal protective equipment (PPE) when on the job to minimize the chances of accidents and injuries.

Safety Vests

Fluorescent vests, t shirts, and bright colored caps are provided by INDOT and are required to be worn at all times while engaged in operations upon or adjacent to a highway open to traffic.

Safety vests and caps are bright colored so that equipment operators and motorists are more likely to see them.

The vest may get caught on equipment and/or other projections, and are properly adjusted to minimize snagging.

Hard Hats

All INDOT employees conducting duties where they are exposed to danger from falling or flying objects that could result in head injuries are required to be protected by approved protective helmets (hard hats).

Specifically, hard hats are required to be worn when an employee is on any worksite where overhead equipment, such as cranes, backhoes, loaders, or other large equipment (as deemed necessary by the supervisor), is considered a part of the worksite.

When bending over, the hard hat may fall off or get blown off. Care is taken in making any sudden movement to recover the hat as a safety hazard may exist. A hat strap may be attached to hold the hat on.

Seat Belts

All operators and occupants of INDOT vehicles are required to wear the complete seat belt assembly of the vehicle.